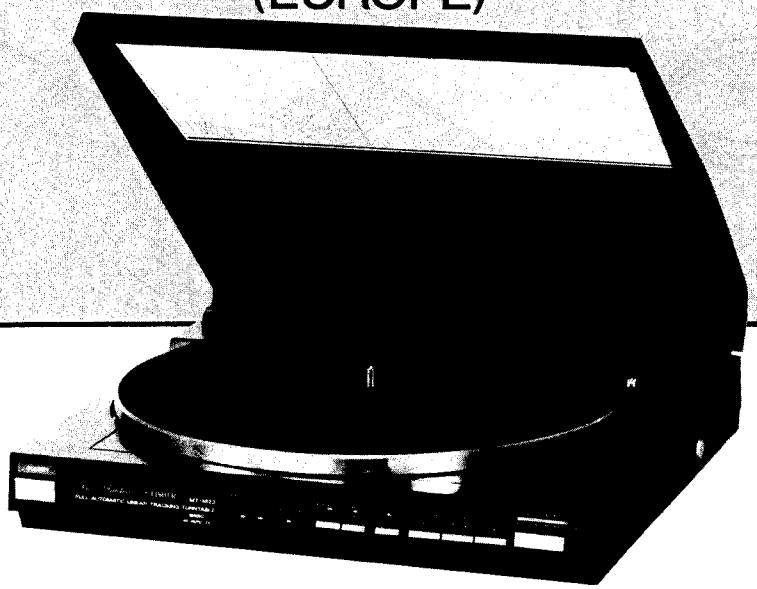
SERVICE MANUAL

FISHER

MT-M23

Full-Automatic Linear Tracking Turntable

(EUROPE)



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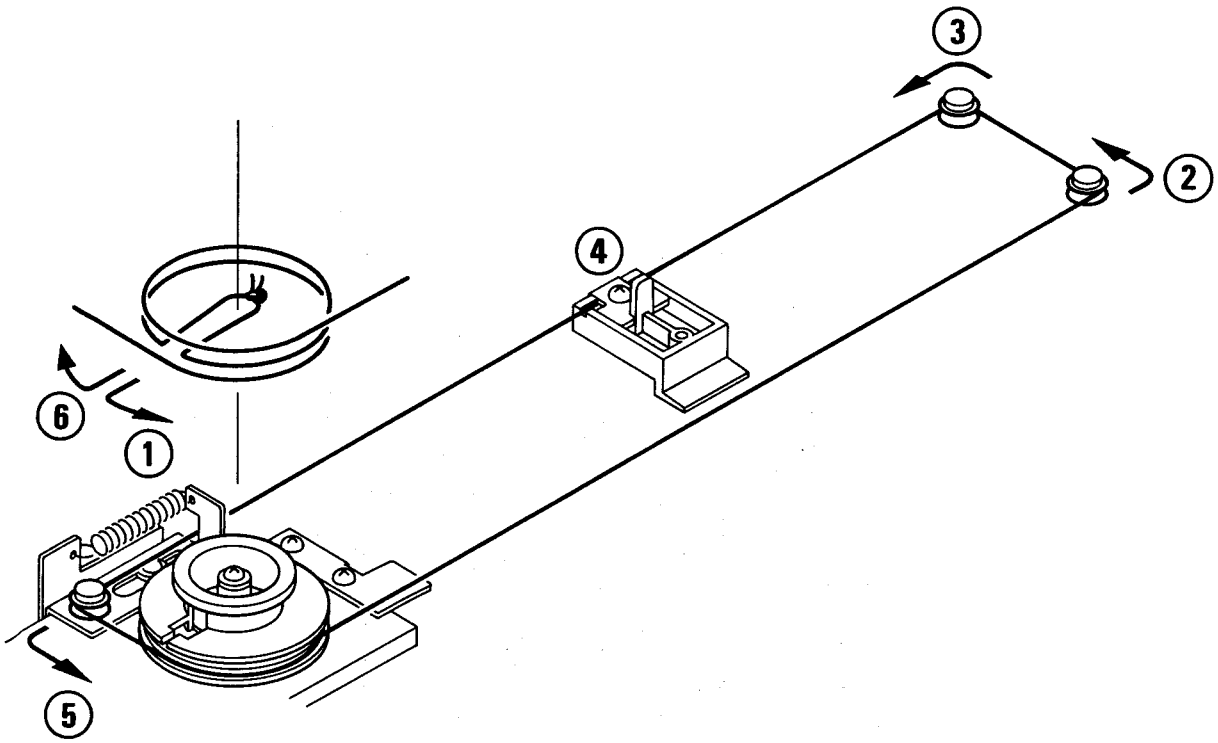
ARM FEED CORD STRINGING

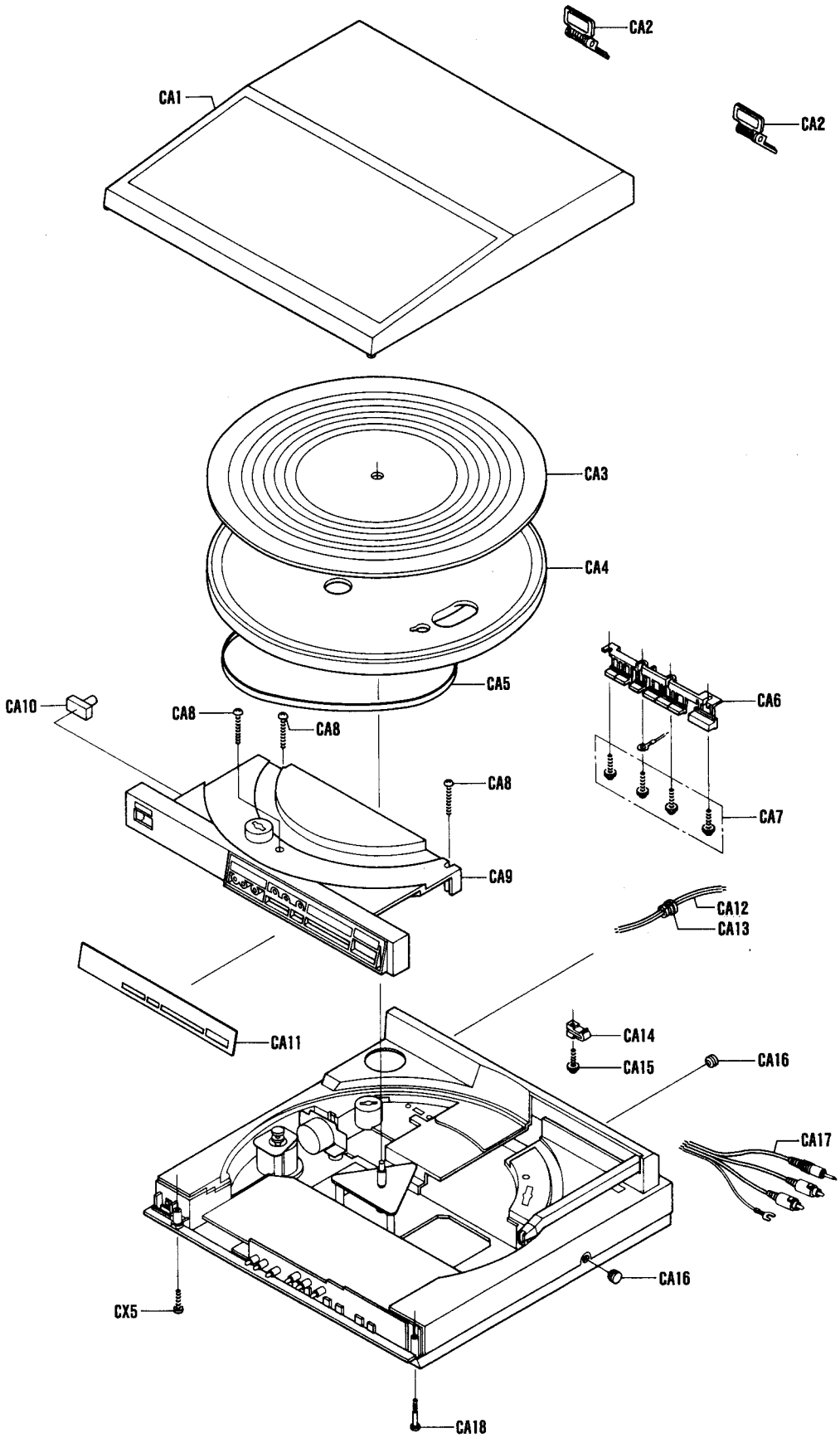


SPECIFICATIONS

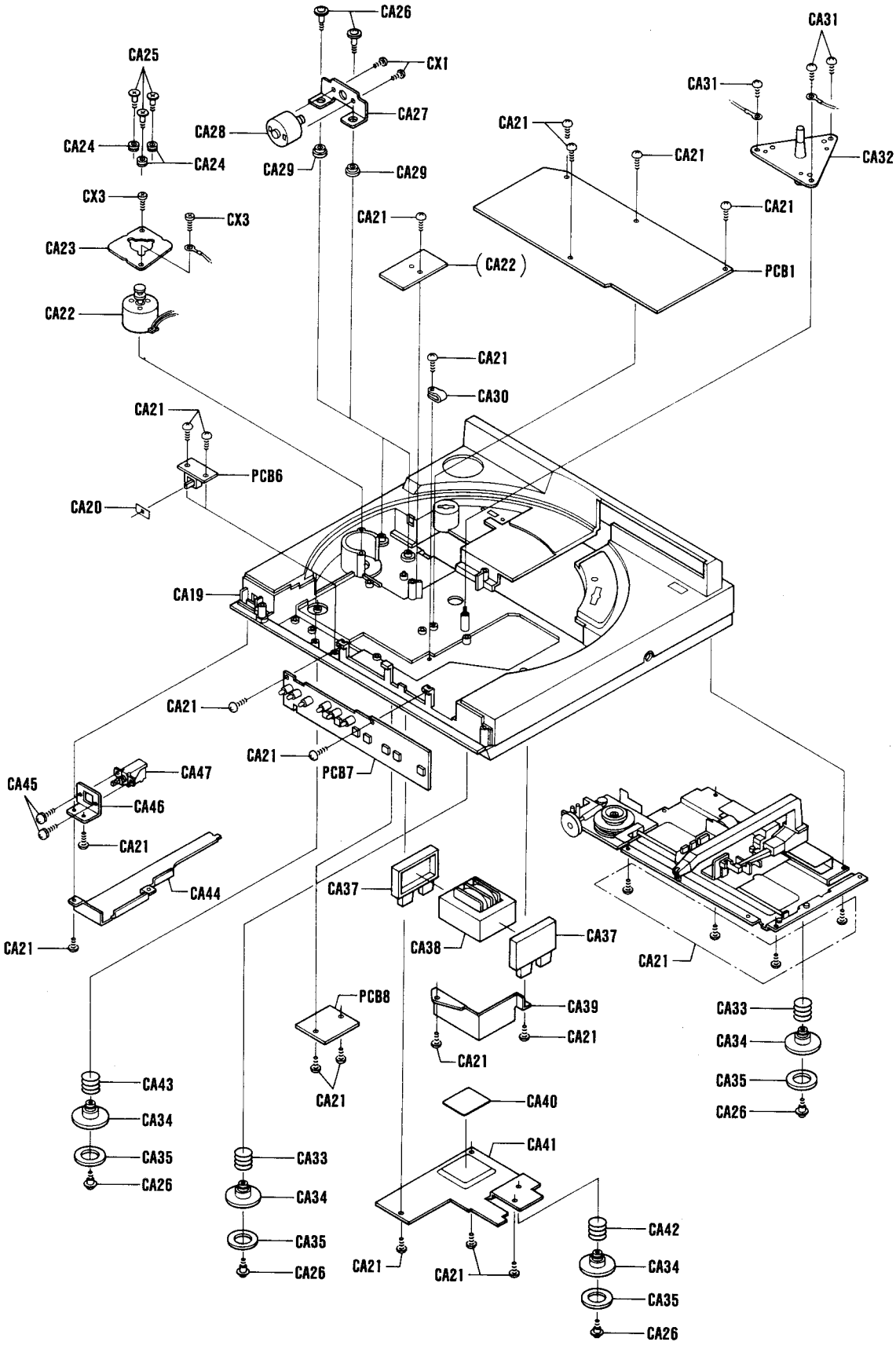
TURNTABLE		MT-M23
Motor		DC Servo
Drive System		Belt
Wow and Flutter (WRMS)		0.08 %
Rumble (DIN 45539B)		−65 dB
Speed Variation		±1.5 %
Tracking Force		2 g
Platter Diameter		300 mm
Platter Weight		0.4 kg
Record Speed Selector		33-1/3 rpm/ 45 rpm
Automatic Functions		
	Stop	Yes
	Reject	Yes
	Repeat	Yes
Automatic Tonearm Return at End of Record		Yes
Manual Function		
	Start	Yes
	Stop	Yes
Tonearm Data		
	Resonance	<18 Hz
	Effective Length	130 mm
	Shape	Straight
Bearing Type		
	Horizontal Friction Sensitivity	Pivot 0.15 g
	Vertical Friction Sensitivity	Pivot 0.2 g
Max. Tracking Error		±0.2°
GENERAL Power Requirements		AC 220 V (50 Hz)
Power Consumption		10 W
Dimensions (W x H x D)		335 x 92 x 345 mm
Weight (approx.)		3.6 kg

Because its products are subject to continuous improvement, Fisher Corporation reserves the right to modify product designs and specifications without notice and without incurring any obligation.

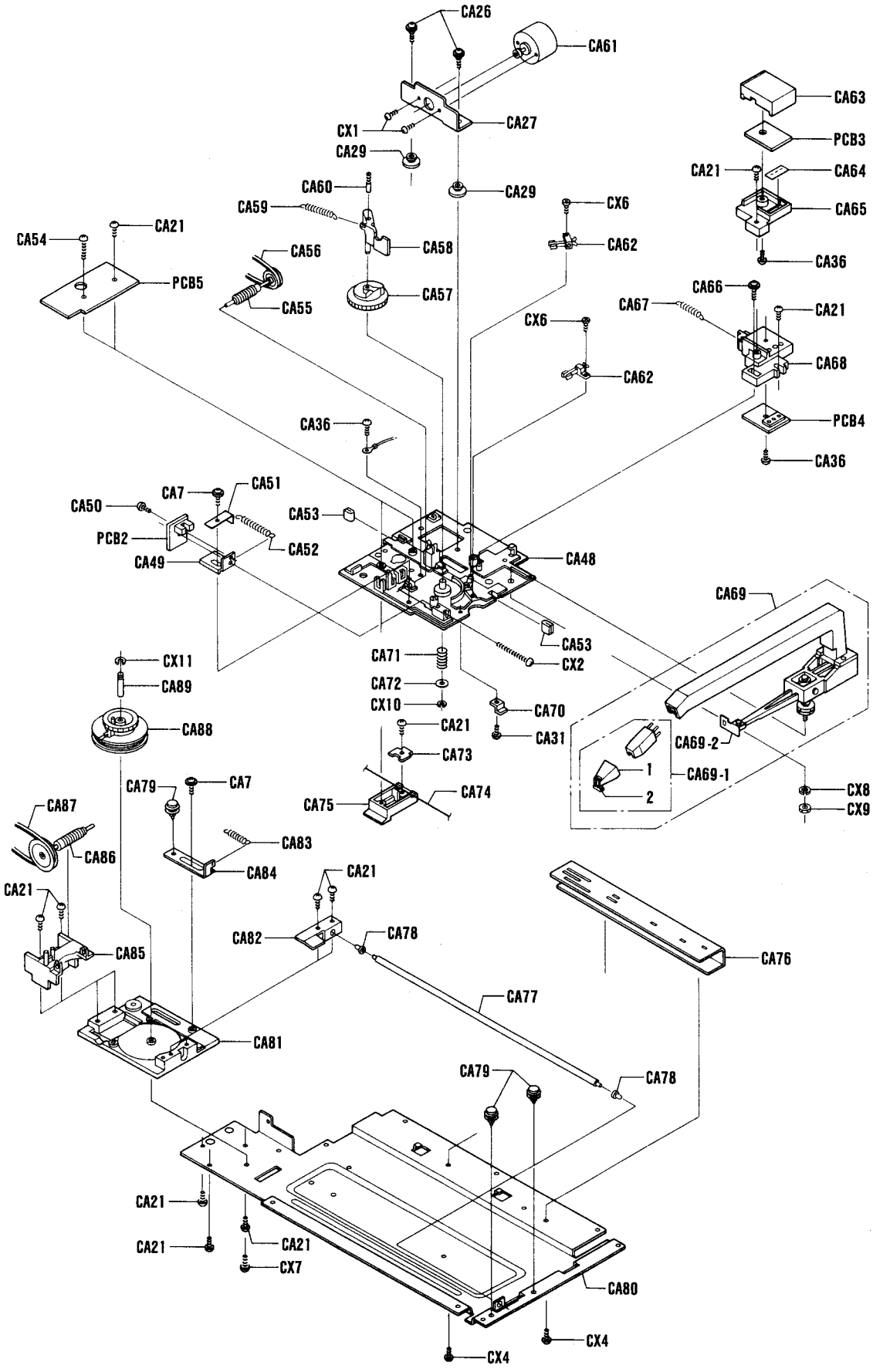
CABINET & CHASSIS EXPLODED VIEW



CABINET & CHASSIS EXPLODED VIEW (Continued)



CABINET & CHASSIS EXPLODED VIEW (Continued)



CABINET & CHASSIS PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	PACKAGE		
	131 2 3901 10300	Staple SS19MM	8
	131 6 2119 02081	Bag Polyethylene-Exp	1
	131 6 2519 00201	Bag Polyethylene Ind	1
	131 6 3069 17050	Patching Sheet	1
	131 6 4559 10900	Manufacturing No	2
	141 2 4219 32700	Screw Transit	1
	141 6 1139 95005	Box Corrugate-Exp	1
	141 6 3119 23100	Pad Front	1
	141 6 3119 23200	Pad Rear	1
	141 6 3119 23401	Pad	1
	141 6 3119 23500	Pad	1
	141 6 3119 25600	Pad	1
	141 6 3319 13200	Spacer	3
	ACCESSORIES		
	131 2 3901 10400	Staple No.10	1
	131 6 2719 10801	Bag Fan	1
	131 6 4519 15700	Guarantee Cert	1
	131 6 4559 10900	Manufacturing No	1
	134 2 2901 11601	Adapter EP	1
	142 6 4119 32129	Explanatory Booklet	1
	CABINET		
	131 2 1310 30740	Name Plate	1
	131 6 4559 10900	Manufacturing No	1
	134 6 4739 13403	Stylus Label	1
	4 2359 75220	Connector 12P Assy [CN01]	1
	4 2359 76743	Connector 4P Assy [CN02]	1
	4 2359 76794	Connector 3P Assy [CN04]	1
	4 2359 77005	Connector 1P Assy	1
	4 2359 77142	Connector 1P Assy (Cont PCB)	1
	4 2359 77145	Connector 1P Assy (Terminal PCB)	1
	131 2 3608 14100	Cramp Wire	8
CA1	141 0 1249 30500	Lid Assy	1
CA2	131 0 2002 16801	Hinge Assy	2
CA3	134 2 6102 15700	Mat Turntable	1
CA4	141 2 5229 00200	Turntable	1
CA5	134 2 6302 11500	Belt	1
CA6	141 2 1659 24800	Knob	1
CA7	131 2 4201 21100	Screw	6
CA8	131 2 4201 19507	Screw, Button Hd. Tapping	3
CA9	141 2 1219 26802	Panel Front	1
CA10	141 2 1659 34600	Knob	1
CA11	141 2 1439 12801	Panel Control	1
CA12	⚠ 4 2432 00071	Power Cord	1
CA13	131 2 6111 21300	Bushing	1
CA14	131 2 3608 12405	Cramp Wire	1
CA15	131 2 4201 25203	Screw, Brazier Hd. Tapping, +M3.0x16	1
CA16	131 2 2904 11000	Pad Lid	2
CA17	4 2369 74460	Plug Cord	1
CA18	141 2 4219 09601	Screw	1
CA19	141 2 1119 99704	Cabinet	1
CA20	141 2 4419 21100	Cloth	1
CA21	131 2 4201 19501	Screw, Button Hd. Tapping	34
CA22	134 0 5011 03500	Motor Assy [M01]	1
	4 5272 00190	Comutate MTR Magnet (Phono)	1
	134 2 6401 14400	Pulley Motor	1
	141 0 1939 02790	Motor P.C.B. Assy	1
CA23	141 2 3169 23300	Metal Mount Motor	1
CA24	134 2 5202 11800	Rubber Cushion	3

Ref. No.	Part No.	Description	Q'ty
CA25	134 2 4201 13600	Screw	3
CA26	134 2 4201 13400	Screw	8
CA27	141 2 3519 67100	Angle Mount(Motor)	2
CA28	4 5272 00181	Comutate MTR Magnet (Arm) [M03]	1
CA29	141 2 4459 31800	Cushion	4
CA30	131 2 3608 11000	Cramp Wire	1
CA31	131 2 4201 19502	Screw, Button Hd. Tapping	4
CA32	141 0 7519 03900	Shaft T.T Complet	1
CA33	141 2 8559 06500	Spring Mounting	2
CA34	141 2 4459 31700	Cushion(Leg)	4
CA35	131 2 5203 23603	Felt	4
CA36	131 2 4201 19500	Screw, Button Hd. Tapping	4
CA37	141 2 4459 34400	Cushion	2
CA38	⚠ 4 2512 21520	Power Trans [T01]	1
CA39	141 2 3169 24300	Metal Mount	1
CA40	141 2 4359 36300	Plate Sever	1
CA41	141 2 1149 35001	Cover	1
CA42	141 2 8559 06501	Spring Mounting	1
CA43	141 2 8559 06502	Spring Mounting	1
CA44	141 2 1149 39300	Cover	1
CA45	131 2 4201 19900	Screw, +M3.0x6	2
CA46	141 2 3169 24900	Metal Mount	1
CA47	⚠ 4 2312 06051	Switch Push Power [S11]	1
CA48	141 0 3129 01900	Unit Plate Assy	1
CA49	141 2 3519 67400	Angle Mount(Photo C)	1
CA50	131 2 4201 20800	Screw, +M2.6x6	1
CA51	141 2 8539 53800	Spring Plate	1
CA52	141 2 8519 31900	Spring, Slide Base	1
CA53	141 2 4459 33800	Cushion	2
CA54	131 2 4201 19504	Screw, Button Hd. Tapping	1
CA55	141 0 5519 10300	Worm Assy	1
CA56	141 2 5649 22600	Belt	1
CA57	141 2 5519 52100	Worm Wheel(A)	1
CA58	141 2 7519 64000	Spindle Lifting	1
CA59	141 2 8519 60000	Spring Plate	1
CA60	134 2 4201 12800	Screw	1
CA61	4 5272 00180	Comutate MTR Magnet (Lifter) [M02]	1
CA62	4 2319 76680	Leaf Switch (Lift Down) [SW09]	1
CA62	4 2319 76680	Leaf Switch (Lift Up) [SW10]	1
CA63	141 2 3519 66900	Cover(Holder)	1
CA64	141 2 3519 67500	Plate(Filter)	1
CA65	141 2 3519 66800	LED Holder	1
CA66	141 2 4219 06300	Screw	1
CA67	134 2 5101 32400	Spring	1
CA68	141 2 3519 67000	LED Holder Base	1
CA69	141 0 6419 00502	Pick-up Assy	1
CA69-1	4 1579 27031	Cartridge (MG-37I)	1
1	4 1579 29451	Stylus (ST-37ID)	1
2	134 2 1402 12700	Retainer Needle	1
CA69-2	141 0 6419 00802	Tone Arm Assy	1
CA70	134 2 4108 27801	Plate	1
CA71	134 2 5101 26500	Spring	1
CA72	141 2 4579 05000	Washer, M3.2x10x0.2	1
CA73	141 2 3519 70300	Angle Mount	1
CA74	131 2 4112 10200	Rope	
CA75	141 2 7319 58000	Holder Slide	1
CA76	141 2 3169 23100	Guide Angle	1
CA77	141 2 5289 01300	Rail	1
CA78	141 2 4459 33200	Cushion	2
CA79	131 0 3020 11800	Pully Assy	3
CA80	141 2 1259 06201	Plate Bottom	1
CA81	141 2 3169 23200	Frame	1
CA82	141 2 3519 69100	Angle Mount	1
CA83	141 2 8519 33300	Spring, Lock Caset Case	1

CABINET & CHASSIS PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
CA84	141 2 3519 69000	Angle Mount	1
CA85	141 2 5739 07300	Support Shaft	1
CA86	141 0 5519 10301	Worm Assy	1
CA87	141 2 5649 25100	Belt	1
CA88	141 2 5519 60100	Worm Wheel(C)	1
CA89	141 2 5529 18900	Shaft	1
CX1	101 3 1302 00311	Screw, Pan Hd., +M2.0x3	4
CX2	101 3 1303 03011	Screw, Pan Hd., +M3.0x30	1
CX3	102 3 1703 00811	Screw, Bind Hd. Tapping-1, +M3.0x8	2
CX4	103 3 1303 00511	Screw, Pan Hd. Tapping-2, +M3.0x5	2
CX5	143 3 1303 02511	Screw, Pan Hd. Tapping-B, +M3.0x25	1
CX6	143 3 1702 00818	Screw, Bind Hd. Tapping-B, +M2.0x8	2
CX7	131 3 1302 31011	Screw, Pan Hd. C SW, +M2.3x10	1
CX8	110 3 2104 00011	Spring Washer-2, M4.0	1
CX9	106 3 1204 00311	Hex. Nut-2, M4.0	1
CX10	112 3 1302 00011	E Ring, M2.0	1
CX11	112 3 1303 00011	Ering, M3.0	1
PCB1	141 0 1939 02741	Control P.C.B. Assy	1
PCB2	141 0 1939 02710	PCR P.C.B. Assy	1
PCB3	141 0 1939 02721	PTR P.C.B. Assy	1
PCB4	141 0 1939 02731	LED P.C.B. Assy	1
PCB5	141 0 1939 02760	Terminal P.C.B. Assy	1
PCB6	141 0 1939 02770	Speed Switch P.C.B. Assy	1
PCB7	141 0 1939 02780	Switch P.C.B. Assy	1
PCB8	141 0 1939 04560	Fuse P.C.B. Assy	1

1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

TURNTABLE ADJUSTMENTS

Stylus Pressure Adjustment

1. Place the unit on a horizontal plane and remove the lid.
2. Turn on the Power switch of the unit.
3. Press ◄ button on the control panel to shift the tonearm to the place as indicated in Fig. 1.
4. Turn the stylus pressure adjustment screw as shown in Fig. 2 through the stylus pressure adjustment hole, so that the stylus pressure meter indicates 1.8 ~ 2.2 g.

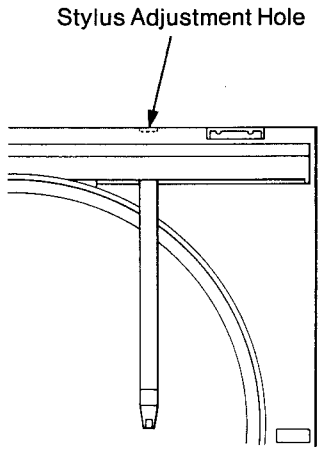


Fig. 1

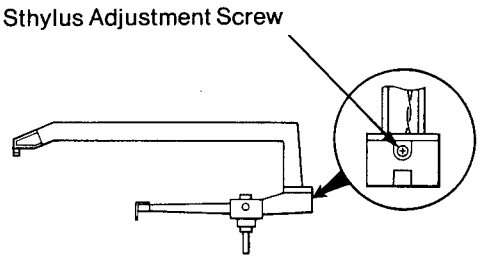


Fig. 2

Tonearm Position Adjustment

1. Turn on the power switch of the unit.
2. Remove the lid and the turntable.
3. Press ◄ button on the control panel to shift the arm to the place where the tonearm position adjustment cam can be observed. (Fig. 3)
4. Adjust the cam, so that the tonearm becomes perpendicular to the rear wall of the cabinet. (Fig. 3)

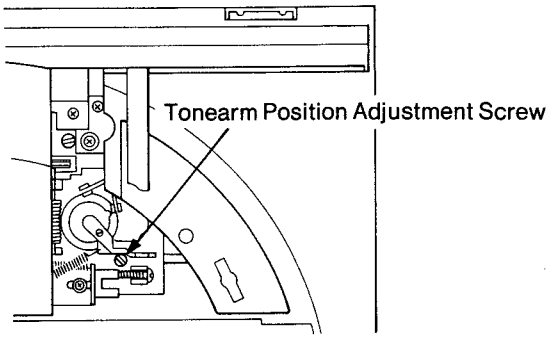


Fig. 3

Stylus Height Adjustment

1. Turn on the power switch of the unit.
2. Remove the lid and the turntable.
3. Press ◄ button on the control panel to shift the arm to the place where the stylus height adjustment screw can be observed. (Fig. 4)
4. Adjust the stylus height to 6mm±0.5mm above the turntable.

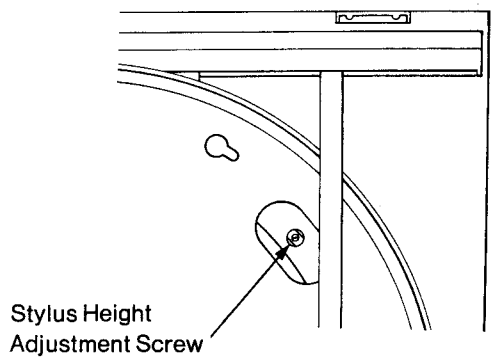


Fig.4

Rotation Adjustment

1. Turn on the power switch of the unit.
2. Use the stroboscope sheet and adjust each volume to obtain proper rotations per minute. (Fig. 5)
   Note: In the first instance, perform the adjustment for 45 r.p.m.

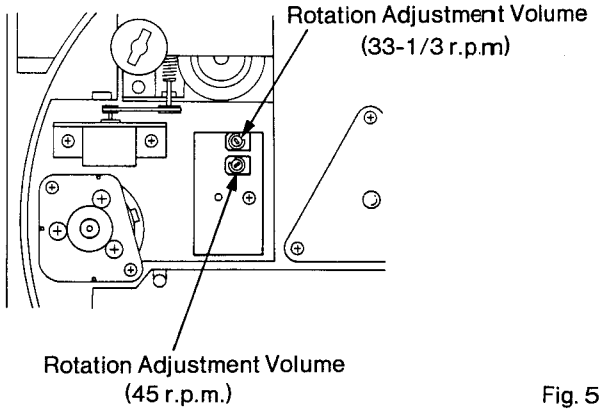


Fig. 5

Arm Trace Adjustment

1. Turn on the power switch of the unit.
2. Place a record on the turntable and trace the silent groove on the last portion of the record.
3. If the groove is not traced correctly, cut off R29 (3.3kΩ) on the Control P.C.Board and re-check the tracing. (Fig. 6)

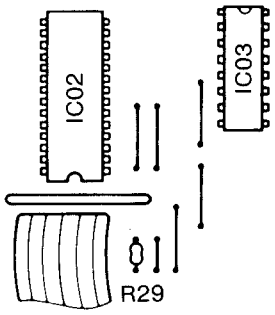


Fig. 6

TURNTABLE ADJUSTMENTS (Continued)

Photointerrupter Position Adjustment for Arm Feed

1. Turn on the power switch of the unit.
2. Place a record with less eccentricity on the turntable and play it.
3. After the record has rotated three or four times, raise the arm by pressing the CUEING button.
4. Turn the arm feed adjustment screw with a screwdriver through the hole on the right side of the cabinet, so that the arm rises straight up. (Fig. 7)

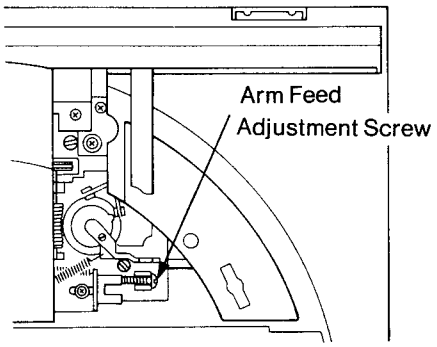


Fig. 7

Lead-in Position Adjustment

1. Turn on the power switch of the unit.
2. Place a record on the turntable and perform the lead-in operation.
3. Adjust the lead-in position adjustment cam, so that the record is led into the correct position.
   Note: If the cam is turned clockwise, the tonearm moves inward. It moves outward if the cam is turned counter-clockwise. (Fig. 8)

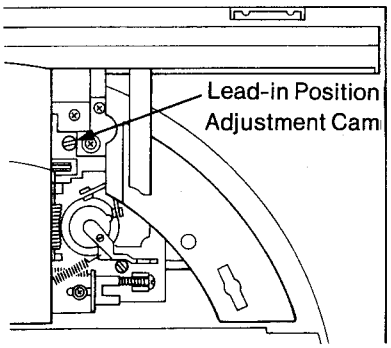


Fig. 8

End Return Sensitivity Adjustment

1. Turn on the power switch of the unit.
2. Connect the oscilloscope to TP1. (Fig. 9)
3. Play a record and adjust VR01 (100 K-B), so that the peak value of the DC element becomes 3.8 ~ 4.0V. (Fig. 10)
4. Confirm that the END Return is smoothly exercised.

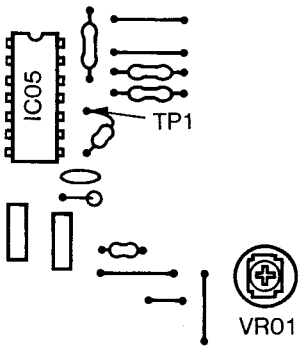


Fig. 9

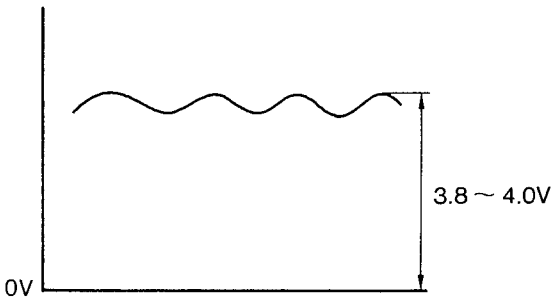
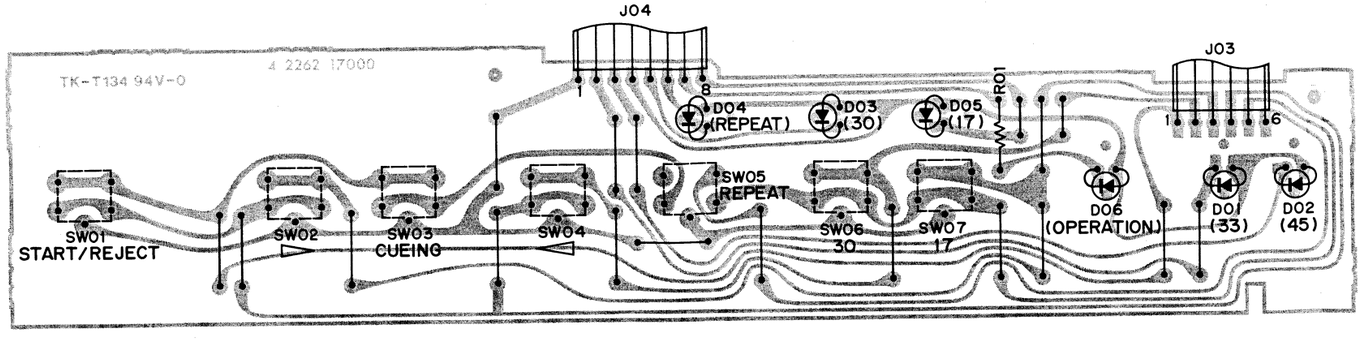
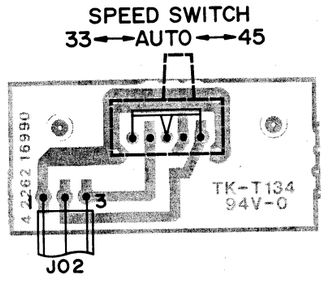


Fig. 10

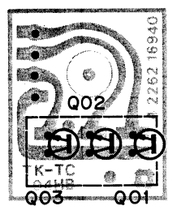
SWITCH P.C.BOARD
(BOTTOM VIEW)



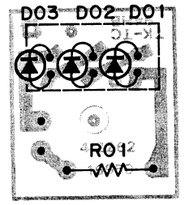
SPEED SWITCH P.C.BOARD
(BOTTOM VIEW)



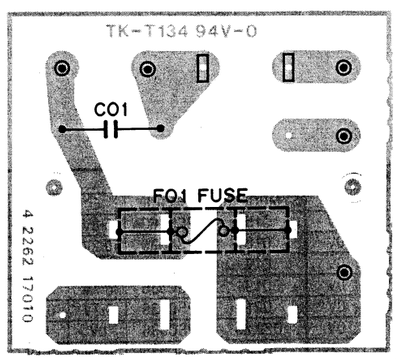
PTR P.C.BOARD
(BOTTOM VIEW)



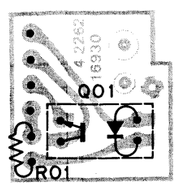
LED P.C.BOARD
(BOTTOM VIEW)



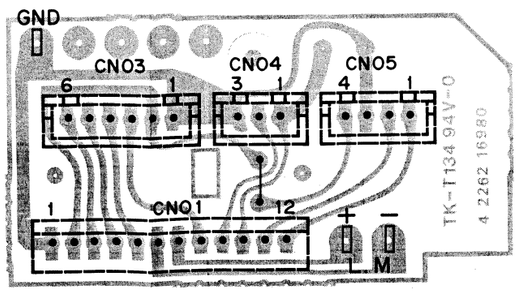
FUSE P.C.BOARD
(BOTTOM VIEW)



PCR P.C.BOARD
(BOTTOM VIEW)

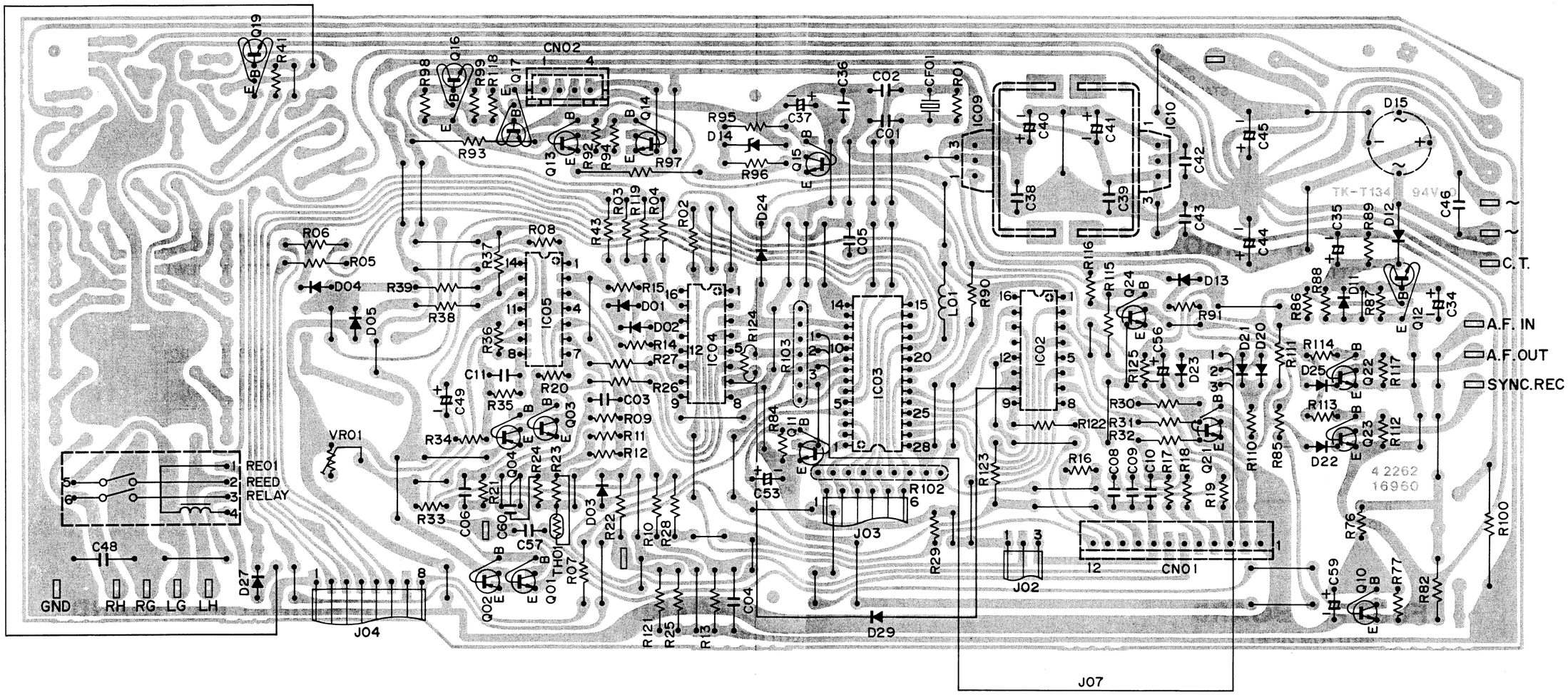


TERMINAL P.C.BOARD
(BOTTOM VIEW)



CONTROL P.C.BOARD

(BOTTOM VIEW)



IC PIN NUMBERS DC VOLTAGES

SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC02	MSM4049RS	5.2V	0V	4.6V	5.2V	0V	5.2V	0V	0V	0V	5.2V	5.2V	0V	–	3.4V	0V	–				
IC04	MSM4049RS	5.2V	0V	5.0V	0V	5.0V	0V	5.0V	0V	5.0V	0V	5.2V	0.4V	–	0.4V	5.2V	–				
IC05	LA6324	−0.5V	0V	0V	12.3V	0V	0V	−0.6V	0V	0V	0V	−12.3V	0V	3.4V	−11.7V						
IC09	NJM7812	15.9V	0V	12.3V																	
IC10	NJM7912	0V	−16.4V	−12.3V																	
IC03	LM6416E	5.2V	5.2V	5.2V	3.9V	2.5V	2.1V	5.2V	5.2V	5.0V	5.0V	5.0V	5.0V	0V	0V	3.6V	4.9V	4.8V	3.9V	5.2V	5.1V
		21	22	23	24	25	26	27	28												
		−0.6V	5.2V	0V	5.2V	0V	5.2V	5.2V	3.8V												

TRANSISTOR DC VOLTAGES

SYMBOL No.	DEVICE	E	C	B	SYMBOL No.	DEVICE	E	C	B
Q01,03	2SD863	−0.5V	12.3V	0V	Q15	2SD863	5.8V	10.8V	5.2V
Q02,04	2SB764	−0.5V	−12.3V	0V	Q16	2SC536	0.2V	9.3V	0V
Q10	2SC536	0V	5.2V	0V	Q17	2SC536	2.6V	2.0V	2.0V
Q11	2SC536	0V	5.2V	0V	Q19	2SC536	0.7V	0V	0V
Q12	2SC536	0.6V	0V	0V	Q21	2SC536	0.7V	0.1V	0V
Q13	2SC536	0.7V	0.5V	0V	Q22,23	2SC536	0V	0V	0V
Q14	2SD863	0.5V	12.3V	1.2V	Q24	2SC536	0.7V	0.1V	0V

P.C.BOARD PARTS LIST

Ref. No.	Part No.	Description			Q'ty
	CONTROL P.C.B. ASSY				
PCB1	141 0 1939 02741	Control P.C.B. Assy			1
	4 2372 00060	Receptacle			17
	103 3 1903 00611	Screw, Brazier Hd. Tapping-2, +M3.0x6			2
	131 2 6201 21500	Plate Heat Sink (for IC09, IC10)			2
J02	131 2 9800 01041	Jumper			1
J03	131 2 9800 01058	Jumper			1
J04	131 2 9800 01099	Jumper			1
J07	131 2 9800 01029	Jumper			1
CN01	4 2369 71901	Connector 12P Top			1
CN02	4 2369 73140	Connector 4P			1
L01	4 2532 00540	Choke Coil 47μH			1
CF01	4 2252 00090	CSB400P			1
VR01	4 2222 02680	Semi Fixed (B-100kΩ)			1
RE01	4 2329 70310	Reed Relay			1
IC02	4 2069 72530	IC, MSM 4049 RS			1
IC03	208 5 3806 41635	IC, LM6416E-352			1
IC04	4 2069 72530	IC, MSM 4049 RS			1
IC05	206 5 1296 32410	IC, LA 6324			1
IC09	4 2069 72560	IC, NJM 7812			1
IC10	4 2069 72570	IC, NJM 7912			1
Q01	203 5 7340 86350	Transistor, 2SD 863			1
Q02	203 5 7350 76450	Transistor, 2SB 764			1
Q03	203 5 7340 86350	Transistor, 2SD 863			1
Q04	203 5 7350 76450	Transistor, 2SB 764			1
Q10	203 5 5000 53650	Transistor, 2SC 536			1
Q11	203 5 5000 53650	Transistor, 2SC 536			1
Q12	203 5 5000 53650	Transistor, 2SC 536			1
Q13	203 5 5000 53670	Transistor, 2SC 536			1
Q14	203 5 7340 86350	Transistor, 2SD 863			1
Q15	203 5 7340 86350	Transistor, 2SD 863			1
Q16	203 5 5000 53650	Transistor, 2SC 536			1
Q17	203 5 5000 53660	Transistor, 2SC 536			1
Q19	203 5 5000 53650	Transistor, 2SC 536			1
Q21	203 5 5000 53650	Transistor, 2SC 536			1
Q22	203 5 5000 53650	Transistor, 2SC 536			1
Q23	203 5 5000 53650	Transistor, 2SC 536			1
Q24	203 5 5000 53650	Transistor, 2SC 536			1
D01	202 5 1410 00110	Diode, GMA 01			1
D02	202 5 1410 00110	Diode, GMA 01			1
D03	202 5 1410 00110	Diode, GMA 01			1
D04	202 5 1410 00110	Diode, GMA 01			1
D05	202 5 1410 00110	Diode, GMA 01			1
D11	202 5 1410 00110	Diode, GMA 01			1
D12	202 5 2470 13540	Diode, DS 135			1
D13	202 5 1410 00110	Diode, GMA 01			1
D14	202 5 3210 05613	Zener Diode, GZA5.6Z			1
D15	DGG - W02- - - - -	Diode, W 02			1
D20	202 5 1410 00110	Diode, GMA 01			1
D21	202 5 1410 00110	Diode, GMA 01			1
D22	202 5 1410 00110	Diode, GMA 01			1
D23	202 5 1410 00110	Diode, GMA 01			1
D24	205 5 2810 44210	Diode, DS 442			1
D25	202 5 1410 00110	Diode, GMA 01			1
D27	202 5 1410 00110	Diode, GMA 01			1
D29	205 5 2810 44210	Diode, DS 442			1
TH01	204 5 9000 05000	Thermistor, SDT 500			1
C01	CP2 2 1101 J003V	Polypropylen	220pF	100V ±5%	1
C02	CP2 2 1101 J003V	Polypropylen	220pF	100V ±5%	1
C03	CC3 3 1500 KD00C	Ceramic	330pF	50V ±10%	1
C04	CI1 0 3250 NF00R	Boundary	0.01μF	25V ±30%	1
C05	CM1 0 4500 J00TV	Mylar	0.1μF	50V ±5%	1
C06	CC3 3 1500 KD00C	Ceramic	330pF	50V ±10%	1
C08	CM1 0 3500 K00SV	Mylar	0.01μF	50V ±10%	1

Ref. No.	Part No.	Description				Q'ty
C09	CM1 0 3500 K00SV	Mylar	0.01μF	50V	±10%	1
C10	CM1 0 3500 K00SV	Mylar	0.01μF	50V	±10%	1
C11	CM1 0 3500 K00SV	Mylar	0.01μF	50V	±10%	1
C12	CD1 0 6160 0001V	Electrolytic	10μF	16V		1
C34	CD4 7 6250 0001V	Electrolytic	47μF	25V		1
C35	CD4 7 5500 0001V	Electrolytic	4.7μF	50V		1
C36	CM1 0 4500 J00TV	Mylar	0.1μF	50V	±5%	1
C37	CD4 7 6100 0001V	Electrolytic	47μF	10V		1
C38	CM1 0 4500 J00TV	Mylar	0.1μF	50V	±5%	1
C39	CM1 0 4500 J00TV	Mylar	0.1μF	50V	±5%	1
C40	CD1 0 7160 0001V	Electrolytic	100μF	16V		1
C41	CD1 0 7160 0001V	Electrolytic	100μF	16V		1
C42	CC1 0 3500 ZG00C	Ceramic	0.01μF	50V	+80,-20%	1
C43	CC1 0 3500 ZG00C	Ceramic	0.01μF	50V	+80,-20%	1
C44	4 2239 71360	Electrolytic	1000μF	25V		1
C45	4 2239 71390	Electrolytic	470μF	35V		1
C46	CC1 0 3501 YEY0C	Ceramic	0.01μF	500V	+100,-0%	1
C48	CI1 0 3250 NF00R	Boundary	0.01μF	25V	±30%	1
C49	CD4 7 5250 0001V	Electrolytic	4.7μF	25V		1
C53	CD1 0 4500 0001V	Electrolytic	0.1μF	50V		1
C56	CD2 2 5500 0001V	Electrolytic	2.2μF	50V		1
C57	CM1 0 3500 K00SV	Mylar	0.01μF	50V	±10%	1
C59	CD1 0 5500 0001V	Electrolytic	1μF	50V		1
C60	CM1 0 3500 K00SV	Mylar	0.01μF	50V	±10%	1
R01	RD1 0 5161 JH000	Carbon	1MΩ	1/6W	±5%	1
R02	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R03	RD3 3 1251 JM000	Carbon	330Ω	1/4W	±5%	1
R04	RD3 3 1251 JM000	Carbon	330Ω	1/4W	±5%	1
R05	RD3 3 1251 JM000	Carbon	330Ω	1/4W	±5%	1
R06	RD1 5 1251 JM000	Carbon	150Ω	1/4W	±5%	1
R07	RD3 3 1251 JM000	Carbon	330Ω	1/4W	±5%	1
R08	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R09	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R10	RD4 7 1251 JM000	Carbon	470Ω	1/4W	±5%	1
R11	RD4 7 1161 JH000	Carbon	470Ω	1/6W	±5%	1
R12	RD4 7 1161 JH000	Carbon	470Ω	1/6W	±5%	1
R13	RD3 9 A251 JM000	Carbon	3.9Ω	1/4W	±5%	1
R14	RD2 7 2161 JH000	Carbon	2.7kΩ	1/6W	±5%	1
R15	RD8 2 1161 JH000	Carbon	820Ω	1/6W	±5%	1
R16	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R17	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R18	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R19	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R20	RD2 2 2161 JH000	Carbon	2.2kΩ	1/6W	±5%	1
R21	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R22	RD4 7 1251 JM000	Carbon	470Ω	1/4W	±5%	1
R23	RD4 7 1161 JH000	Carbon	470Ω	1/6W	±5%	1
R24	RD4 7 1161 JH000	Carbon	470Ω	1/6W	±5%	1
R25	RD4 7 A251 JM000	Carbon	4.7Ω	1/4W	±5%	1
R26	RD3 9 2251 JM000	Carbon	3.9kΩ	1/4W	±5%	1
R27	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W	±5%	1
R28	RD3 3 2251 JM000	Carbon	3.3kΩ	1/4W	±5%	1
R29	RD3 3 2161 JH000	Carbon	3.3kΩ	1/6W	±5%	1
R30	RD1 0 4251 JM000	Carbon	100kΩ	1/4W	±5%	1
R31	RD1 0 4251 JM000	Carbon	100kΩ	1/4W	±5%	1
R32	RD1 0 4251 JM000	Carbon	100kΩ	1/4W	±5%	1
R33	RD4 7 3161 JH000	Carbon	47kΩ	1/6W	±5%	1
R34	RD2 7 3161 JH000	Carbon	27kΩ	1/4W	±5%	1
R35	RD1 2 4161 JH000	Carbon	120kΩ	1/4W	±5%	1
R36	RD4 7 3251 JM000	Carbon	47kΩ	1/4W	±5%	1
R37	RD2 2 3251 JM000	Carbon	22kΩ	1/4W	±5%	1
R38	RD8 2 2251 JM000	Carbon	8.2kΩ	1/4W	±5%	1
R39	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R40	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
R41	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R43	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R76	RD4 7 3161 JH000	Carbon	47kΩ	1/6W	±5%	1
R77	RD6 8 2161 JH000	Carbon	6.8kΩ	1/6W	±5%	1
R82	RD1 0 4251 JM000	Carbon	100kΩ	1/4W	±5%	1
R84	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R85	RD4 7 3161 JH000	Carbon	47kΩ	1/6W	±5%	1
R86	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R87	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R88	RD6 8 3161 JH000	Carbon	68kΩ	1/6W	±5%	1
R89	RD6 8 2161 JH000	Carbon	6.8kΩ	1/6W	±5%	1
R90	RD2 2 3251 JM000	Carbon	22kΩ	1/4W	±5%	1
R91	RD2 2 3161 JH000	Carbon	22kΩ	1/6W	±5%	1
R92	RD2 2 3161 JH000	Carbon	22kΩ	1/6W	±5%	1
R93	RH4 7 1102 JZ000	Metal	470Ω	1W	±5%	1
R94	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R95	RD2 2 1251 JM000	Carbon	220Ω	1/4W	±5%	1
R96	RD6 8 1251 JM000	Carbon	680Ω	1/4W	±5%	1
R97	RH3 9 0102 JZ000	Metal	39Ω	1W	±5%	1
R98	RD2 2 3161 JH000	Carbon	22kΩ	1/6W	±5%	1
R99	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R100	RH3 3 1102 JZ000	Metal	330Ω	1W	±5%	1
R102	4 2219 70460	Resistor 10k x 8 J				1
R103	4 2219 70450	Resistor 10k x 6 J				1
R110	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R111	RD3 3 2251 JM000	Carbon	3.3kΩ	1/4W	±5%	1
R112	RD2 2 3161 JH000	Carbon	22kΩ	1/6W	±5%	1
R113	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R114	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R115	RD1 0 4251 JM000	Carbon	100kΩ	1/4W	±5%	1
R116	RD3 3 2161 JH000	Carbon	3.3kΩ	1/6W	±5%	1
R117	RD2 2 3161 JH000	Carbon	22kΩ	1/6W	±5%	1
R118	RD2 2 3161 JH000	Carbon	22kΩ	1/6W	±5%	1
R119	RD2 2 3251 JM000	Carbon	22kΩ	1/4W	±5%	1
R121	RD1 0 1251 JM000	Carbon	100Ω	1/4W	±5%	1
R122	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R123	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R124	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
	PCR P.C.B. ASSY					
PCB2	141 0 1939 02710	PCR P.C.B. Assy				1
CN05	4 2359 76742	Connector 4P Assy				1
Q01	4 2039 71430	Photo Interrupter				1
R01	RD5 6 1251 JN000	Carbon	560Ω	1/4W	±5%	1
	PTR P.C.B. ASSY					
PCB3	141 0 1939 02721	PTR P.C.B. Assy				1
	141 2 3529 38900	LED Spacer				1
CN03	4 2359 76606	Connector 6P Assy				1
Q01	4 2039 71500	Photo TR SPS-103-01				1
Q02	4 2039 71500	Photo TR SPS-103-01				1
Q03	4 2039 71500	Photo TR SPS-103-01				1
	LED P.C.B. ASSY					
PCB4	141 0 1939 02731	LED P.C.B. Assy				1
	141 2 3529 38900	LED Spacer				1
D01	4 2029 73160	Photo D. SLR-902A-01				1
D02	4 2029 73160	Photo D. SLR-902A-01				1
D03	4 2029 73160	Photo D. SLR-902A-01				1
R01	RD5 6 1251 JM000	Carbon	560Ω	1/4W	±5%	1

Ref. No.	Part No.	Description				Q'ty
	TERMINAL P.C.B. ASSY					
PCB5	141 0 1939 02760	Terminal P.C.B. Assy				1
	4 2372 00060	Receptacle				3
CN01	4 2369 71901	Connector 12P Top				1
CN03	4 2369 73160	Connector 6P				1
CN04	4 2369 73130	Connector 3P				1
CN05	4 2369 73140	Connector 4P				1
	SPEED SWITCH P.C.B. ASSY					
PCB6	141 0 1939 02770	Speed Switch P.C.B. Assy				1
	141 2 3529 43500	Spacer				1
SW08	4 2319 76670	Slide Switch 1P3T (Speed)				1
	SWITCH P.C.B. ASSY					
PCB7	141 0 1939 02780	Switch P.C.B. Assy				1
	141 2 3529 40800	Spacer(a)				3
	141 2 3529 40900	Spacer(b)				3
SW01	4 2312 05801	Key Board Switch (Start/Reject)				1
SW02	4 2312 05801	Key Board Switch (▷)				1
SW03	4 2312 05801	Key Board Switch (Cueing)				1
SW04	4 2312 05801	Key Board Switch (◁)				1
SW05	4 2312 05801	Key Board Switch (Repeat)				1
SW06	4 2312 05801	Key Board Switch (30)				1
SW07	4 2312 05801	Key Board Switch (17)				1
D01	DYY - SLR- 54VT-	LED, SLR 54 VT 3 (33rpm)				1
D02	DYY - SLR- 54VT-	LED, SLR 54 VT 3 (45rpm)				1
D03	DYY - SLR- 54VT-	LED, SLR 54 VT 3 (30cm)				1
D04	DYY - SLR- 54PT-	LED, SLR 54 PT 3 (Repeat)				1
D05	DYY - SLR- 54VT-	LED, SLR 54 VT 3 (17cm)				1
D06	DYY - SLR- 54PT-	LED, SLR 54 PT 3 (Operation)				1
R01	RD1 5 1251 JM000	Carbon	150Ω	1/4W	±5%	1
	FUSE P.C.B. ASSY					
PCB8	141 0 1939 04560	Fuse P.C.B. Assy				1
	⚠ 4 2352 00200	Fuse Holder				2
	4 2379 21930	Terminal 1P				2
	111 2 6220 11100	Wire Wrap Terminal				4
	131 2 6114 00200	Cover Safety				1
F01	⚠ 4 2349 20960	Fuse (T 200mA)				1
C01	⚠ 4 2239 70970	Capacitor	0.01μF	400V		1

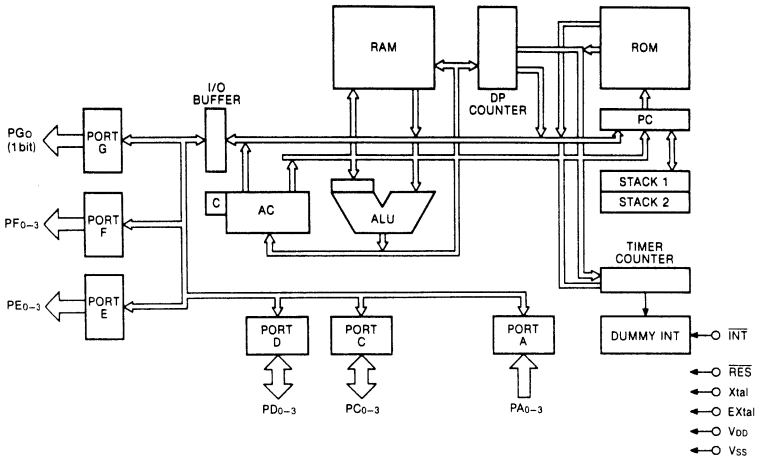
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

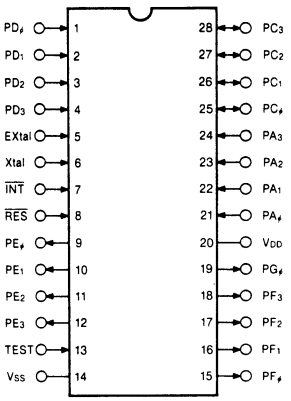
PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

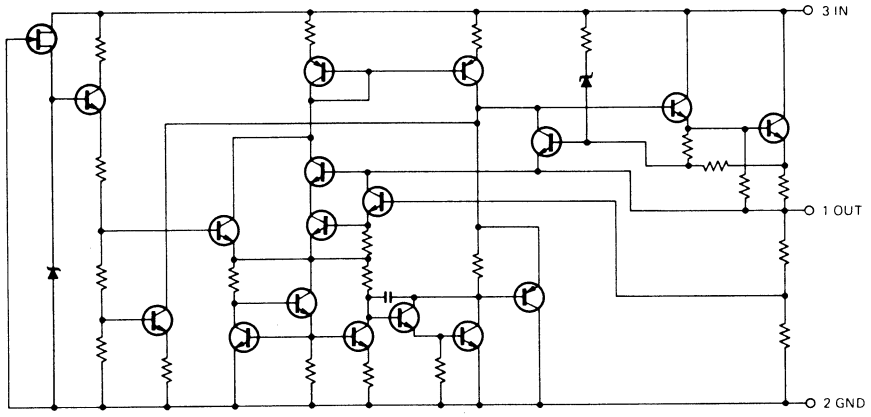
IC SIGNAL FLOW & EQUIVALENT CIRCUIT

CONTROL IC LM 6416 E

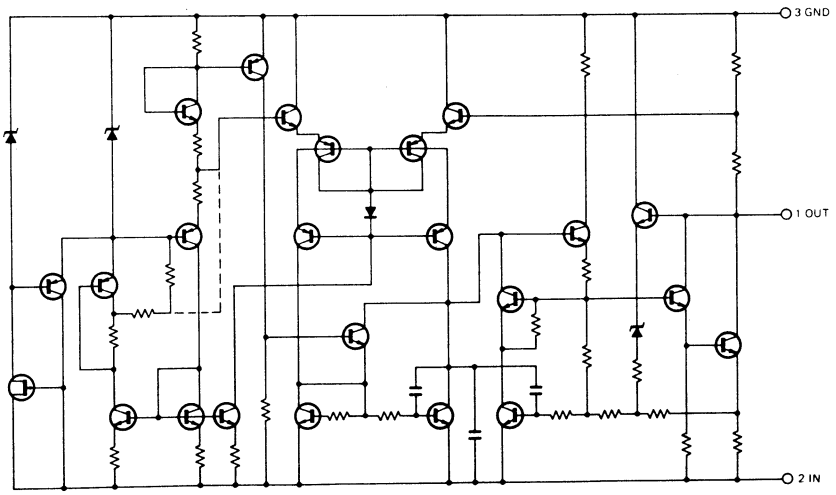




VOLTAGE REGULATOR IC NJM 7812

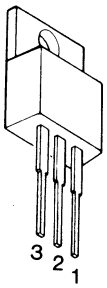


VOLTAGE REGULATOR IC NJM 7912

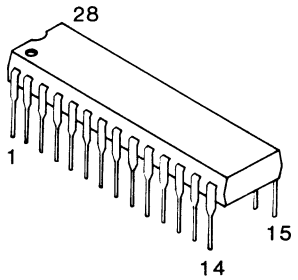


SEMICONDUCTOR LEAD IDENTIFICATION

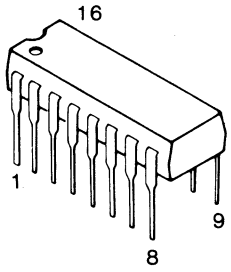
INTEGRATED CIRCUITS



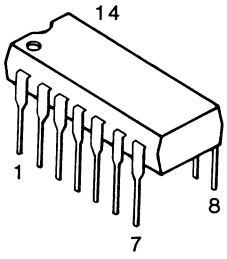
- NJM 7812
- NJM 7912



- LM 6416 E-352

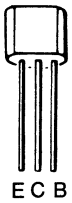


- MSM 4049 RS

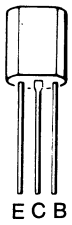


- LA 6324

BI-POLAR TRANSISTORS

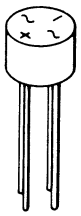


- 2SC 536

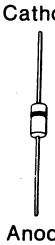


- 2SB 764
- 2SD 863

DIODES

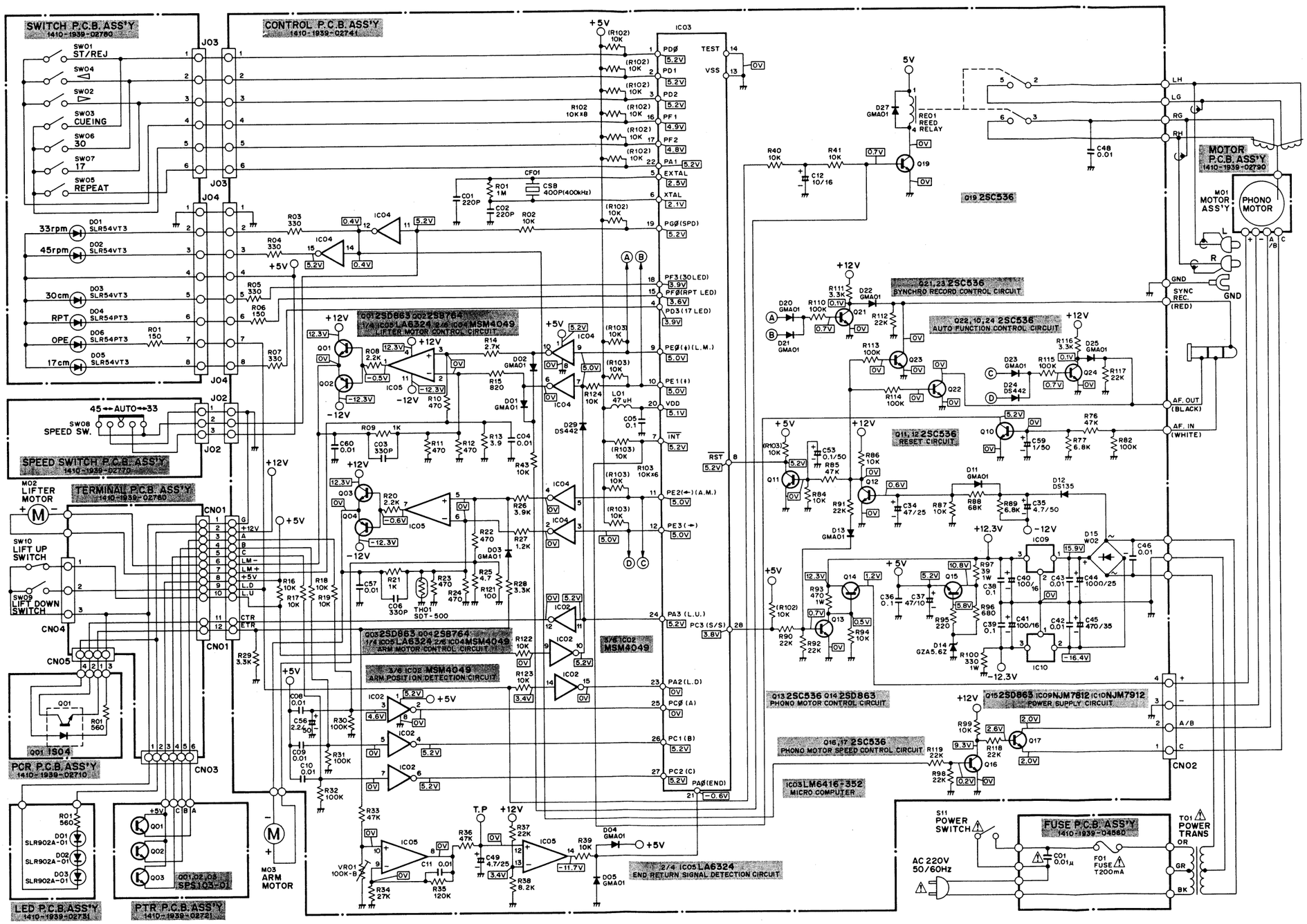


- W 02



- DS 135 D
- DS 442
- GMA 01
- GZA 5.6 Z

SCHEMATIC DIAGRAM



No.	Name	Position	No.	Name	Position
SW01	START / REJECT Switch	OFF	SW07	DISC SIZE Switch (17)	OFF
SW02	REVERSE Switch (►)	OFF	SW08	SPEED SELECT Switch	AUTO
SW03	CUEING Switch	OFF	SW09	LIFT DOWN Switch	OFF
SW04	FORWARD Switch (◄)	OFF	SW10	LIFT UP Switch	ON
SW05	REPEAT Switch	OFF	SW11	POWER Switch	OFF
SW06	DISC SIZE Switch (30)	OFF			

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

NOTES:

1. All resistors values are indicated in "ohm" ($K=10^3$, $M=10^6$).
2. All capacitors values are indicated in "μF" ($P=10^{-12}$).
3. All voltages indicated on the schematics are measured under the following conditions.
   a. Use a V.T.V.M.
   b. All voltages ±10 % with respect to chassis ground
   c. No signals at input terminals
   d. AC input at 220 volts 50 Hz
4. This is a basic schematic diagram.

Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

POINT TO POINT WIRING DIAGRAM